

## REMARKS

With the cancellation of claims 2-5 and 25, claims 1, 6-19, 23-24, and 26-28 are pending. Claims 6 and 7 have been amended into independent claims. Claims 23, 27, and 28 have been amended to depend on claim 6. Claim 24 has been amended to depend on claim 7. These amendments are supported at least by the disclosures in page 7, line 7 to page 8, line 17 and page 11, lines 3-21 of the specification. Applicants respectfully submit that no new matter has been introduced.

### Claim Rejections -- 35 U.S.C. 103

I. The Office Action erroneously states that: "Claims 2-4, 20 and 23-25 are rejected under 35 U.S.C. 103(a) as being **anticipated** by Formato et al. (U.S. Patent 6,248,469 or WO 9/10165) in view of Fukuda et al. (U.S. Patent Application Publication 2002/0076594 A1) and Sakuma et al. (JP 2000-256486A) (emphasis added). under 35 U.S.C. 103(a). Because 35 U.S.C. 103(a) governs obviousness, not anticipation, applicants assume that the Office Action intends to make the rejection on obviousness grounds. Applicants respectfully traverse the obviousness rejections of claims 2-4, 20, and 23-25 over Formato, in view of Kukuda and Sakuma.

Claims 2-4, 20, and 25 have been cancelled, rendering the rejections of these claims moot. Claims 23 and 24 have been amended to depend on claim 6 and 7, respectively. Thus, applicants will address the obviousness rejection of claims 23 and 24 when applicants discuss claims 6 and 7 below.

II. Applicants respectfully traverse the obviousness rejections of claims 5-7 and 27-28 over Formato, Fukuda, and Sakuma under 35 U.S.C. 103(a). Claim 5 has been canceled, rendering the rejection of claim 5 moot.

The Office Action acknowledges at page 5 that “the combined teaching of Formato, Fukuda, and Sakuma is silent” on Mathematical Expressions 2 and 3 recited in claims 6 and 7, respectively. The Office Action then states that “in view of substantially identical structure of the polymers for ion exchange compositions between the combined teaching of Formato, Fukuda and Sakuma and instant claims, it is the examiner position that Formato, Fukuda and Sakuma’s composite ion exchange membrane possesses these properties.” Applicants respectfully disagree. There is no evidence that the composite ion exchange membranes of Formato, Fukuda and Sakuma have structures “substantially identical” to the claimed composite ion exchange membranes. Formato, Fukuda and Sakuma, even when taken in combination, do not teach or suggest a composite ion exchange membrane comprising an ion exchange resin composition wherein Mathematical Expression 2 or 3, as recited in claims 6 or 7, is satisfied.

Further, Applicants have discovered, surprisingly, that where  $n/(n+m)$  satisfies Mathematical Expression 2 as recited in claim 6 or Mathematical Expression 3 as recited in claim 7, the composite ion exchange membrane has superior properties in terms of ion conductivity, swellability, and permeability of methanol. *See* page 26, lines 1-10. A greater  $n/(n+m)$  value leads to an increase in ion conductivity and the swellability by water, affecting the form stability of membranes. *See* page 26, lines 1-3. On the other hand, when  $n/(n+m)$  gets smaller, the ion conductivity decreases. However, the permeability of methanol also tends to decrease. Applicants have found the unexpected result that membranes having large  $n/(n+m)$ , which satisfies Mathematical Expression 2 recited in claim 6 or Mathematical Expression 3 recited in claim 7, exhibit high ion conductivity and can suitably be employed in applications for solid polymer fuel cells using hydrogen as fuel. *See* page 26, lines 5-7. In applications for direct methanol-type fuel cells using methanol as fuel, membranes having small  $n/(n+m)$ , which

satisfies Mathematical Expression 2 defined in claim 6 or Mathematical Expression 3 defined in claim 7, can suitably be employed due to less swellability by water and less methanol permeability. *See* page 26, lines 7-10. None of Formato, Fukuda and Sakuma teaches or suggests the unexpected effects on ion conductivity, swellability, and permeability of methanol achieved by having  $n/(n+m)$  which satisfies Mathematical Expression 2 or 3, as recited in claims 6 or 7.

For at least the foregoing reasons, claims 6-7 and claims 27 and 28 which depend on claims 6 and 7, would not have been obvious over Formato, Fukuda and Sakuma. Similarly, claims 23 and 24 would not have been obvious over Formato in view of Fukuda and Sakuma. Withdrawal of the rejections of claims 6, 7, 23, 24, 27 and 28 under 35 U.S.C. 103(a) is respectfully requested.

III. Applicants respectfully traverse the obviousness rejection of claim 26 over Formato, Fukuda, and Sakuma under 35 U.S.C. 103(a).

As discussed above, claim 6 would not have been obvious over Formato, Fukuda, and Sakuma. Claims 26 depends on claim 23, which depends on claim 6. Thus, claim 26 would not have been obvious over formato, Fukuda, and Sakuma. Withdrawal of the rejection of claim 26 under 35 U.S.C. 103(a) is respectfully requested.

IV. Applicants respectfully traverse the obviousness rejections of claims 2-4, 20, and 23-25 over Suzuki et al. (JP 2002-203576) in view of McGrath et al. (WO 02/25764) under 35 U.S.C. 103(a). Claims 2-4, 20, and 25 have been cancelled, rendering the rejections of these claims moot.

Claims 23 and 24 have been amended to depend on claim 6 and 7, respectively. Neither Suzuki nor McGrath teaches or suggests a composite ion exchange membrane comprising an ion exchange resin composition having a  $n/n+m$  value that satisfies Mathematical Expression 2 or 3, as recited in claims 6 or 7. Thus, claims 6-7 (and claims 23 and 24, which depend on claims 6

and 7, respectively) would not have been obvious over Suzuki in view of McGrath. Withdrawal of the rejections is respectfully requested.

## CONCLUSION

In the event that the filing of this Amendment along with a petition for a one-month extension of time is deemed not timely, applicants petition for an appropriate extension of time. The Commissioner is authorized to charge extensions of time and any other fees determined to be due (with the exception of the issue fee) and to credit any overpayment to Deposit Account No. 11-0600.

Respectfully submitted,  
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